

## CHAPTER 1A

### GENERAL INFORMATION

#### 1A-01. INTRODUCTION

As Quality Assurance and Quality Control Representatives (QA/QC), you should be thoroughly familiar with all the provisions of the contract documents, including submittals. Plans and specifications should include all revisions, changes, and amendments. In addition, you should be thoroughly familiar with the administrative policies of your supervisors. The general requirements for quality control and quality assurance are given in paragraph 1A-04, Quality Control and Quality Assurance.

#### 1A-02. RESPONSIBILITY

Quality Assurance/Quality Control Representatives have different responsibilities and authorities, dependent upon the organizational set-up under which they work and upon their own capabilities. Each QA/QC, however, needs to know the part he has in the organization, and should have or obtain clear and precise answers to the following questions:

- a. Do I understand the importance of my responsibility for the highest quality construction?
- b. Do I have the technical knowledge, tact and good judgment to effectively perform my quality assurance duties?
- c. Do I fully understand the extent of my responsibilities?  
Ask yourself:
  - (1) Have I accepted all of my responsibilities?
  - (2) Have I overlooked any of my potentialities?
  - (3) Will I use my authority tactfully?
  - (4) Do I understand my supervisor's expectations with respect to my responsibilities?
  - (5) Am I aware of my responsibility to record in my daily report all verbal instructions given and received?

#### 1A-03. AUTHORITY

- a. Make sure you know the extent of your authority. Your authority constantly involves the requirement that work be accomplished in accordance with the contract plans and specifications. At times implementing this authority requires advice and assistance.
- b. Check with your supervisor on policies with respect to your authority to stop contractor operations for such things as safety violations as well as construction deficiencies.

#### 1A-04. QUALITY CONTROL AND QUALITY ASSURANCE

- a. Contractors' Quality Control (CQC) is a requirement in all Corps of Engineers construction contracts. Quality

Assurance is that function which is provided by the representatives of the contracting officers in the Construction Divisions supervision and administration of the contract.

b. The quality assurance role is to be able to assure the Contracting Officer, and through him the owner, that the quality requirements of the contract have been satisfied.

c. Contractor Quality Control requires that the contractor implement the program and use its provisions daily to control quality of the work.

d. Effective CQC requires a serious and concentrated effort on the part of the supervisory and inspection personnel.

e. Contract requirements provide the tools for the accomplishment of the goals, as follows

(1) CQC personnel are described as to education, experience, and capability.

(2) Before start of construction, the Resident Engineer shall conduct a Mutual Understanding Meeting with the contractor and discuss the contractor's quality control system. Construction start will be delayed until after the Mutual Understanding Meeting and submittal/acceptance of at least the interim CQC plan. The CQC plan will be viewed with a critical eye. The QA Representative will assure that the CQC Plan and actual CQC staffing are sufficient to obtain the quality of construction designed in the contract plans and specifications. Quality assurance monitors and confirms quality, but quality control must provide it.

(3) Preparatory Phase Meetings. These CQC held (QAR Attended) meetings will be held before each definable feature of work to ensure that the documentation is complete, materials are on hand, and the people who are to perform the work understand what they need to know about the feature of work. Both the contract specifications and those referenced in the contract specifications must be in the Contractor's library and available to the CQC inspectors. For instance, the welding specifications will depend entirely on the American Welding Society (AWS) Specifications for all requirements. If CQC does not have the AWS specifications, the CQC cannot know or enforce these provisions. QA personnel can be helpful to the CQC in obtaining referenced specifications. The contractor's job hazard analysis plan for the particular work item on the agenda must be reviewed at this time

(4) Initial Inspections. These CQC/QA inspections must be conducted in a timely manner at beginning of a definable feature of work. A check of the preliminary work will determine Whether or not the Contractor, through his CQC organization and the craftsmen involved, thoroughly understands and is capable of accomplishing the work as specified. Safety, using the Job Hazard Analysis plan, is also checked for proper implementation at this time.

(5) Follow-up Inspections. These inspections, also conducted by the Contractor's quality control staff, occur daily when work is in progress and are for the purpose of assuring that the controls established in the earlier phases of inspection continue to provide work which conforms to the contract requirements. Most of the comments in both the CQC and QA daily reports result from these inspections.

f. In all projects there is work that is 'cut and cover\*', that is, work that cannot be inspected "after the fact". This includes concrete, where the size, number and location of reinforcing steel cannot be readily determined after the concrete is placed. Most of the underground utilities cannot be inspected after covering. Work of this nature must be closely controlled and monitored.

g. A disadvantage with the system arises from the fact that CQC personnel, as employees of the contractor, are unlikely to readily take actions which will result in delay and expense to the contractor for the sake of quality. If concrete is to be placed with a maximum slump of 2", it is unlikely that a load with 4" or 6" slump will be rejected. If roofing bituminous material is overheated, it is unlikely that it will be rejected. The deficiencies occasioned by these conditions may become latent defects revealed long after any possible contractor liability can be enforced.

h. The foregoing situations may occur and the Corps representative responsible for quality assurance has a vital role in assuring that these and similar situations do not occur. Responsibility for compliance should not be left wholly to the contractor.

i. As a Quality Assurance representative must closely monitor the CQC program to assure that the 3-phase control system is being correctly performed and that the contractor is effectively controlling all operations. In the event that CQC personnel are not capable and/or are not inspecting properly, your supervisor should be notified immediately, with a view to correcting performance by using one or more of the enforcement tools provided for in the contract. Your records and reports will document all facts.

#### 1A-05. PLANS AND SPECIFICATIONS

a. Make a thorough review of plans and specifications during bidding period.

(1) Watch for omissions.

(2) Watch for discrepancies between plans and specifications.

(3) Check plans and specifications against requirements with which you have had problems with on similar jobs.

(4) Compare elevations, grades and details shown on plans as existing, with those at the actual site.

(5) Report all errors, omissions, discrepancies, and deficiencies to your supervisor.

b. Always keep a posted and marked up set of plans and specifications convenient for ready reference.

c. Make sure that the contractor has this same information.

d. Anticipate contractor's operations by reviewing the plans and specifications for each operation before it begins.

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(1) Discuss contract requirements in each Preparatory Phase Meeting with the contractor before each operation begins.

(2) Highlight and/or make notes of those provisions which need special attention, such as:

(a) Unusual requirements.

(b) Those which other contractors have overlooked.

(c) Repetitive deficiencies.

e. Use the checklists in these guides to help find significant items in the plans and specifications.

#### 1A-06. SHOP DRAWINGS

a. Review designer's prepared contractor submittal register, plans, and specifications. Check submittal register for inclusion of all shop drawings required including layouts of equipment, equipment rooms, etc.

b. The contractor is required to enter his data onto the submittal register and submit it to the contracting officer. Compare this submittal with your check list.

c. The contractor is required to periodically update the submittal register.

d. Make continual checks of the submittal register to avoid untimely and omitted submittals so as to avoid delay of construction.

e. Compare the shop drawings to the contract requirements and report apparent differences to your supervisor. (Approved shop drawings do not constitute a waiver of a contract requirement.)

f. Make sure each detail on the shop drawing is clearly understood.

g. The contractor must make note on his submittal of items which deviate from contract requirements.

h. Check material being installed against the approved shop drawing. (If the contractor installs unapproved material, inform him in writing that the material, if not subsequently approved, will be removed at his expense.)

#### 1A-07. QUALITY ASSURANCE REPORT

a. Prepare a complete and accurate daily report, using ENG Form 2538-2. Check for inclusion of the following:

(1) Conditions - weather, moisture, soil conditions, etc. (Note when and how adverse condition hampered or shut down a contractor's operation).

(2) Activities - work phases, including locations (include description of each activity and the inspection phase, i.e., Preparatory, Initial, Follow-up).

(3) Controversial matters - disputes, questionable items, etc. (Also, note if they were settled and, if so, how they were settled.

(4) Deficiencies and violations - description, location and corrective action.

(5) Instructions given and received - identify recipient and source.

(6) Progress information - report all delays, action taken or action contemplated.

(7) Equipment - report arrival and departure of each major item of equipment by manufacturer, model, serial number and capacity: report equipment in use and idle equipment.

(8) Reports - make sure quality assurance reports are identified, dated and signed.

b. Do not repeat, in the QA daily reports, items that have already been listed on the CQC daily reports.

c. Check the CQC daily report each day for accuracy and to assure that instructions received are noted. Effectiveness of the CQC inspections reported must be checked during the job site visit.

#### 1A-08. PRE-CONSTRUCTION CONFERENCE

a. When possible, both the Quality Assurance Representative and the Quality Control System Manager should attend this conference.

b. Minutes of the conference should be available to each of the quality assurance/quality control representatives assigned.

c. The subject of the proposed Quality Control Plan should be well documented.

#### 1A-09. EQUIPMENT PROPOSAL

a. Does equipment proposed by the contractor have CO approval (more applicable to civil works projects)?

b. Certain equipment requires a safety test or check before initial operation at the site.

c. Some equipment requires a permit or license before use.

#### 1A-10. CLAIMS

a. Always be alert to possible claims or matters of possible dispute.

b. When you discover that a claim or dispute is in the making, notify your supervisor and record all facts in your quality assurance (QA/QC) daily reports.

c. Make sure that adequate and accurate records of facts, materials, labor and equipment associated with the claim or dispute are on file.

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d. Situation photographs may be appropriate to supplement the record.

e. Differing site conditions may be cause for claim - contractor must notify CO in writing before disturbing conditions.

#### 1A-11. PROGRESS SCHEDULES

a. Render any necessary assistance to the contractor for his preparation of initial and revised progress schedules.

b. Encourage contractor to submit timely updates.

c. Be familiar with the approved progress schedule and carefully watch for any slippage in progress.

d. Anticipate slow downs and delays affecting progress.

e. Promptly report to your supervisor and record in the daily QA/QC reports, all indications of any slippage in progress.

f. When construction falls behind schedule, carefully examine the construction operations for ways progress can be improved.

g. Be very careful not to direct or dictate the contractor's operation (the CO may want to direct the contractor to take steps to improve his progress).

h. Keep informed of the required contract completion date and know the advance notice required by higher authorities for pre-final and final inspections.

#### 1A-12. LABOR ENFORCEMENT

a. Keep informed of the labor provisions of the contracts on which you are working.

b. Always avoid taking part in any labor disputes.

c. Promptly inform your supervisor of any labor problems and disputes.

d. Check that anti-discrimination posters and minimum wage rates are kept in a conspicuous place.

a. Assist office personnel in assuring that:

(1) The man-hours worked are accurately shown on payrolls.

(2) Payrolls are required weekly from each subcontractor who worked on the job.

(3) Each laborer and each machine is classified in accordance with the particular work function.

f. Make spot checks with contractor's employees to verify that at least minimum wage rates are being paid for the work classification being performed.

1A-13. STORAGE OF MATERIALS

- a. Check to see that adequate space is available for the contractor\*s operations and storage areas.
- b. Check that approval has been obtained for temporary sheds, buildings, etc., which the contractor proposes to install.
- c. See that material and equipment are properly stored and protected.
- d. Make sure that safety requirements, especially in the storage of flammable or explosive materials, are adhered to.
- e. Make sure that temporary structures are secured against wind damage.
- f. Assure that the necessary heating and ventilating are provided.

1A-14. CONTRACTOR\*S PAYMENT ESTIMATES

- a. Check specifications for method of measurement and payment for each item of work to be accomplished.
- b. Be familiar with schedules of prices and methods of measurement and payment.
- c. Assist the Office Engineer in preparation of partial pay estimates.
  - (1) Make timely measurements of work completed and work accomplished each pay period. It is usually a good idea to seek contractor\*s concurrence.
  - (2) Keep orderly, neat and accurate records of measurements.
- d. Check material on hand for which payment is being made for:
  - (1) Fair market value of materials.
  - (2) Conformance with contract requirements (see submittal)
  - (3) Proper storage and protection.
  - (4) Reduction in quantity by amount of material placed in the work.
- e. Be alert to all increases or decreases in quantity of work shown on the unit price schedules.
  - (1) Make as accurate an estimate as possible of variations in quantities.
  - (2) Report these variations in quantities promptly to your supervisor.

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1A-15. DEFENSE MATERIALS SYSTEM

On applicable contracts check to see that the contractor is abiding by the rules of the Defense Materials System.

a. Is the contractor correctly rating all orders, and are they certified and dated?

b. Is the promised delivery date noted on the orders?

c. Does the order give complete information which will enable a person to precisely identify the order and processing channel?

1A-16. RIGHTS-OF-WAY

Check that all rights-of-way are obtained prior to entrance on property.

a. Require written evidence if contractor-obtained.

b. Check contract provisions if Government-obtained.

c. Know the limits of rights-of-way and locations of benchmarks that may be used to determine location and elevations.

1A-17. PHOTOGRAPHS.

a. If allowable, check for photographs of:

(1) Views of major construction projected during various stages of progress.

(2) Materials or construction related to changed conditions, claims, or potential claims.

(3) Work in place for which removal has been ordered because of noncompliance with plans and specifications.

(4) Construction in which unusual difficulties have been overcome or where the subject is of technical interest.

(5) New methods of construction.

(6) property or material damages.

(7) Emergency conditions and safety violations.

(8) Accident scenes.

(9) Defective work.

b. Check that each picture taken is completely described, identified, and dated.

1A-18. RECORD DRAWINGS

a. The contractor\*s Record Drawings should be reviewed monthly by the Resident Engineer\*s staff to ensure they are correct.

b. Ensure that as soon as a change or addition is made in construction it is noted on the Record Drawing.



c. See that the following items are considered in the changes for Record Drawings:

- (1) Size, type, and location of existing and new utility lines.
- (2) Layout and schematic drawings of electrical circuits and piping.
- (3) Dimensions and details transferred from shop drawings.
- (4) Verification of alignment, cross section, and layout of earthwork.
- (5) Actual locations of anchors, construction and control joints. etc. in concrete, where they are different from those shown on contract drawings.
- (6) Changes in location of equipment and architectural features.
- (7) Cross out such words, phrases and details for optional or equal requirements and list or detail specifically the items provided.

#### 1A-19. TRANSFER OF CONSTRUCTION

The following records and materials will be needed for transfer of the construction facilities to the Using Service. They must be obtained and accounted for.

- a. Record of Property - Name, make, and model number of each piece of equipment.
- b. All equipment test records.
- c. Approved shop drawings.
- d. Operating and maintenance instructions.
- e. Spare parts and tools.
- f. Keys.
- g. Guarantees with required contact and expiration date.
- h. Record Drawings.

#### 1A-20. QUALITY ASSURANCE/QUALITY CONTROL

Remember that QA/QC responsibilities begin at the inception of construction and ends only with the final acceptance by the user. Proper QA/QC verifies what has been done as well as what may have been left out.

#### 1A-21. SAFETY

a. The provisions of EM 385-1-1, Safety and Health Requirements Manual,\* which are incorporated into the contract, must be rigidly enforced. This enforcement is as important as any duty of the Quality Assurance Representative.

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b. A good QA/QC technique to follow daily is to fully assess the unit of work or operation for safety compliance before proceeding with QA/QC for the technical compliance.

c. Be familiar with the contractor\*s accident prevention program and in particular the job hazard analysis plans. These plans should be discussed in the Preparatory Meeting and checked for implementation during the Initial Inspection Meeting.

d. Applicable Occupational Safety and Health Act (OSHA) requirements are included in EM 385-1-1.